

APPLICATION

09/13

ALLIEDSIGNAL INC
699 ROUTE 46 EAST
TETERBORD NJ 07608

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
COMMISSIONER OF PATENTS AND TRADEMARKS
Address: Washington, D.C. 20231

ATTORNEY DOCKET NO.
246-97-004

EXAMINER
DA EE, W

PAPER NUMBER

10/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/135,185

Applicant(s)
Welch et al.

Examiner
Wilson Lee

Group Art Unit
2821



☒ Responsive to communication(s) filed on Nov 22, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-20 is/are pending in the application.

Of the above, claim(s) none is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-20 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 9

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Remarks

1. This office action is response to the amendment A filed on September 17, 1999 and the supplemental amendment B filed on November 22, 1999. Due to the fact that the present supplemental amendment was crossed in mail, the previous office action dated November 26, 1999 was mailed out before receiving the supplemental amendment. Response to the previous office action dated November 26, 1999 is not needed.

Response to Arguments

2. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnishi et al.(5,804,924).

Regarding Claim 1, Ohnishi discloses a discharge lamp comprising a DC 3 as a first means for providing electrical energy to the lamp to produce a first range of brightness; a DC 4 as a

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second means for providing electrical energy to the lamp to produce a second range of brightness(See Figures 1-3)

In addition, Ohnishi discloses the second means(DC 4) rendering voltage which is below the steady-state voltage(V_{la}) (after the inverter circuit transforms the DC waveform to bipolar) (See Col. 3, lines 64-65 and Figure 24) continuously maintained in the glow discharge mode of the lamp(See Figure 24).

Ohnishi, as discussed above, essentially discloses the claimed invention but fails to show the discharge lamp is a fluorescent lamp. However, it would have been obvious to one of ordinary skill in the art to place a fluorescent lamp operated by Ohnishi's circuit, since Ohnishi fails to limit the choice from all kind of discharge lamps, the implementation of such a specific lamp(e.g. fluorescent lamp) is not restricted.

Regarding Claim 2, Ohnishi discloses a switch means(SW) for switching between the first and second means(DC 3 and DC 4) for providing electrical energy(See Figures 1-3).

Regarding Claim 3, Ohnishi, as discussed above, discloses the second means(DC 4) maintaining the operation of the lamp in the glow discharge mode(See Figure 24).

Ohnishi also discloses the second means having a source of voltage(after the inverter circuit(S1-S4) transforms the DC waveform to bipolar) which its operational frequency can be varied by switches S1-S4 that inherently modulates the pulse width(See Col. 8, lines 50-67 to Col. 8, lines 1-9). (See math rule: $F = 1/T$, T = pulse width, F = frequency).

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Regarding Claims 4 and 9, Ohnishi discloses the bipolar voltage is a square wave signal(See Figure 34). In addition, Ohnishi discloses the frequency getting low in order to supply glow discharge mode voltage to the lamp(e.g. glow mode voltage, the voltage below steady-state voltage of the lamp) (See Figure 24).

Regarding Claim 5, Ohnishi discloses the first and second ranges of brightness overlapped because as discussed above, the first brightness range supplied by the first means is higher than the second brightness range supplied by the second means. The first brightness range covers the second brightness range that occurs the overlapping.

Regarding Claim 6, Ohnishi discloses a low brightness supply(DC 4) comprising a switch means(SW) shown in Figures 1-3 for connecting the lamp(LP) to the source(inverter Sa-Sd) of pulse width modulated bipolar voltage and for preventing voltage of a high level for igniting during the glow discharge mode when switch(SW) switches to low voltage means(DC 4).

Ohnishi, as discussed above, essentially discloses the claimed invention but fails to show the discharge lamp is a fluorescent lamp. However, it would have been obvious to one of ordinary skill in the art to place a fluorescent lamp operated by Ohnishi's circuit, since Ohnishi fails to limit the choice from all kind of discharge lamps, the implementation of such a specific lamp(e.g. fluorescent lamp) is not restricted.

Regarding Claim 7, Ohnishi discloses the bipolar voltage is a square wave signal(See Figure 34). In addition, Ohnishi discloses the frequency getting low in order to supply glow mode

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voltage to the lamp(e.g. glow mode voltage, the voltage below steady-state voltage of the lamp)
(See Figure 24).

Regarding Claim 8, Ohnishi discloses the frequency of the voltage exceeding the lamp steady-state voltage(e.g. the voltage from DC 3) is made higher than the frequency of the voltage below the lamp steady-state voltage(e.g. the voltage from DC 4)(See Col. 3, lines 60-65, Col. 9, lines 51-54). In addition, as described in detail in the preceding rejection on claim 1, Ohnishi's invention meets the limitation of claim 8.

Regarding Claims 10 and 14, Ohnishi discloses the intensity(e.g. proportional to the amplitude of current) of the first range of brightness depends on the pulse width(e.g. number of cycles, operational frequency) (See Col. 7, lines 34-44) and RMS voltage of the PWM waveform applied to the lamp(LP)(See Figure 24).

Regarding Claim 11, Ohnishi discloses there are two switches(Sa and Sc shown in Figure 2, or S1 and S2 shown in Figure 16) alternately connecting the second power supply(DC 4) to a first input(e.g. one end or electrode of the lamp) and a second input(e.g. another end or electrode of the lamp) of the lamp.

Regarding Claim 12, Ohnishi discloses the switches as discussed in the preceding rejection on claim 11, inherently controlled by two generators(e.g. base of the transistor(switch)). It is well known to a skill in the art that inverter switches for lamp lighting must operated by one or more additional voltage generator(s) or source(s). Inverter switching cannot be done manually but electrically.

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Regarding Claim 13, as discussed above in detail in the preceding rejections on claims 7, 12, Ohnishi's invention meets the limitation on claim 13. (Also see Figure 34).

Regarding Claim 15, Ohnishi, as discussed above essentially discloses the claimed invention but fails to disclose the specific range of the low frequency. However, it would have been obvious to one of ordinary skill in the art to tune the particular frequency range (e.g. 60-400Hz) for glow discharging in order to obtain a workable and desired voltage to operate the lamp. Discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA 1955). Further, it is well known to a skill in the art that the frequency range in the glow discharge mode for fluorescent lamp is 60Hz to 400Hz.

Regarding Claim 16, as discussed above, Ohnishi essentially discloses the claimed invention but fails to disclose the switches are transistors. However, it would have been obvious to one of ordinary skill in the art to use transistors as the inverting switches in Ohnishi's invention since Ohnishi fails to limit the choice from all kind of switches, the implementation of such a particular switch (e.g. transistor) is not restricted. Further, it is well known to a skill in the art that transistor is commonly and widely used as inverter switch for lamp circuit.

Regarding Claim 17, Ohnishi's invention, as discussed above in detail in the preceding rejections on claims 1 and 15, meets the limitation on claim 17. In addition, all generators which switches inverter require duty cycle less than 100% in order to fetch sequences of pulses to the inverter switches. It is well known to a skill in the art that the generator having duty cycle at

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100% fetches a flat line of high voltage(e.g. no pulses) to the inverter switches that would crash the circuit.

Regarding Claim 18, Ohnishi, as discussed above essentially discloses the claimed invention but fails to disclose the specific range of the low frequency. However, it would have been obvious to one of ordinary skill in the art to tune the particular frequency(e.g. 100Hz) for glow discharging in order to obtain a workable and desired voltage to operate the lamp. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA).

Regarding Claim 19, Ohnishi discloses first and second switches(Sa and Sc) connecting opposite terminals of the lamp(LP) to one side of the supply voltage(DC3 or DC4)(See Figure 2).

As discussed above, Ohnishi essentially discloses the claimed invention but fails to disclose the switches are transistors. However, it would have been obvious to one of ordinary skill in the art to use transistors as the inverting switches in Ohnishi's invention since Ohnishi fails to limit the choice from all kind of switches, the implementation of such a particular switch(e.g. transistor) is not restricted. Further, it is well known to a skill in the art that transistor is commonly and widely used as inverter switch for lamp circuit.

Ohnishi discloses that the switches inherently obtain a means for applying signals to the switches at a duty cycle in order to achieve desired lower brightness level(e.g. base of the transistor(switch)). It is well known to a skill in the art that inverter switches for lamp lighting

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must operated by one or more additional voltage generator(s) or means. Inverter switching cannot be done manually but electrically.

Regarding Claim 20, Ohnishi's second power source(DC4) as a constant current source which is capable of rendering constant current. In addition, Ohnishi discloses that the switches(Sa-Sd) inherently obtain a means for applying signals to the switches at a duty cycle to achieve desired lower brightness level(e.g. base of the transistor(switch)). Because it is well known to a skill in the art that inverter switches for lamp lighting must operated by one or more additional voltage means. Inverter switching cannot be done manually but electrically.

Ohnishi discloses there are two switches(Sa and Sc) connecting to the opposite sides of the lamp(Figure 2). Ohnishi fails to show any resistor connecting between the inverter switch(Sa or Sc) and the switch(SW) respectively. However, it would have been obvious to one of ordinary skill in the art to provide resistors connecting therein to attain the desired current flow to the switches in order to obtain a desired brightness of the lamp.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nagai et al.(5,349,268) discloses his invention using two DC power supplies. Rudolph(5,825,136) discloses a pair of series resistor and transistor connected to the lamp.


Correspondence

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Wilson Lee whose telephone number is (703) 306-3426.

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7. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0956.
8. Papers related to Technology Center 2800 applications **only** may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 308-7722 or (703) 308-7724.

WL
12-03-1999


Don Wong
Supervisory Patent Examiner
Technology Center 2800